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ABSTRACT

The needs and opportunities in the heavy-duty alternative fuel vehicle training arena were examined in an informal ethnographic study of the appropriateness and effectiveness of the instructional materials currently being used in such training. Interviews were conducted with eight instructors from the National Alternative Fuels Training Program (which is funded by the U.S. Environmental Protection Agency and administered by West Virginia University) and two training participants (individuals from the heavy-duty vehicle mobile emissions laboratory). It was concluded that material developed for heavy-duty alternative fuel vehicle training programs should accomplish the following: act as preparation for manufacturers' training by including universal instruction in the basic limitations of the systems being worked on and technicians' abilities; focus on common causes of vehicular operating problems, basic timing functions, and requirements for proper fuel distribution; be based on a hands-on training approach; include open-ended learning components; focus on the basic components for emissions; the influences of various engine sensors and adjustments on emissions; adjustments to the emission system that would provide the most efficient power settings; the preventive maintenance function of technicians in the field; and the cost benefits of different engine configurations. (Includes interview questions and a list of participants). (MN)

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Commercial Training Issues: Heavy Duty Alternative Fuel Vehicles

Doug Eckert

September 1996

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National Alternative Fuels Training Program
Morgantown, WV

and Presented at:
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COMMERCIAL TRAINING ISSUES

HEAVY DUTY ALTERNATIVE FUEL VEHICLES

National Alternative Fuels Training Program

September 17, 1996

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Douglas Eckert

Commercial Training Issues

May 20, 1996

I. Purpose of the study

This study was conducted as an informal ethnographic study to summarize the needs and opportunities in the heavy duty alternative fuel vehicle training arena.

A. Context of the study

The National Alternative Fuels Training Program develops and delivers train-the-trainer programs for alternative fuel vehicles. Since its conception, West Virginia University's Technology Education Department has been developing train-the-trainers material. Training materials and programs have been conceptualized based on need.

1. How did the study originate?

We are interested in the application of technology to small group settings. Currently we are developing instructional material for a train-the-trainers program where part of the expectations are the development of job-aids, manuals and activities. In particular, the current manual that we are working on deals with heavy duty vehicles used for alternative fuel vehicles. What we would like to do is to study the current heavy duty material used by trainers in their instruction of students to perform maintenance training. The purpose would be to evaluate the common skills that are being developed through current training programs, in order to evaluate the appropriateness and effectiveness of the material to further manual development.

2. Who is the study for?

The primary beneficiaries of the study will be instructors of alternative fuel vehicle training programs in the US. In order to serve the instructors, the developers of the training material will use the results of the study as guidance in the development of heavy duty training material.

3. How is the study funded?

The study is being conducted for the National Alternative Fuels Training Program by one of its employees. The direct costs of the study will not be billed to the program. The constraints associated with the collection of this data can be problematic for this study. Currently, there are not many known sources relating to heavy duty methods in the alternative fuels market for vehicles. We feel that the best source of information will come from the interviews of instructors, observation of participants, and the available documents in the field.

The budget required for this evaluation will consist of the transcribing the interviews ($25 x 10 = $250); telephone calls; one graduate assistants (5 weeks work [20 hours week, $300 per week]= $1500) and the cost of computer use which is not included here. The cost of the evaluation should not exceed $2000, excluding program formulation time.

4. How was the evaluator selected?

The evaluator was self selected. The reason that I chose myself was that it would enable me to accomplish two goals simultaneously. One goal being the development of an ethnographic study to satisfy course requirements, and the other being the need to develop useful information to aid in the development of work related duties.

B. Study focus

This study is being conducted as a formative evaluation for the Heavy Duty Application component of Technology Education's task.

1. What questions are to be answered by the study?

The purpose of the evaluation is to determine the appropriateness content and/or approach of the instructor to the emerging need for training heavy duty material applications to technicians. The question is proposed as a result of prior field tests of material developed through the program where this issue has arisen from participants, instructors, and technicians. How can the program be designed, and created to enhance training? What do the participants want to receive from the training being? The participants needs will be received during a focus group interview.

2. Why these questions?

The conceptual framework of the evaluation will be descriptive in nature. The goal is to describe the program content holistically and from the perspectives of the participants. In order to capture the essence of the interviews, the study will focus on the proposed components of the training program and include theoretical information provided in the classroom context, a lab area where practical application of the theory is first used, and a live shop where the hands- on experiences occur. The descriptive approach has been chosen in order to expand the program study into a useful, readable, and constructive tool in order to facilitate the further development of the training material, while capturing the experience of the intended program for future reference.

3. What actions are anticipated or decisions to be made as a result of the study?

The evaluative questions need to be focused on developing the material into a product. The stated concerns from participants in previous courses can be summarized as "How is this training going to help me tomorrow?" by a number of participants. The bottom line is their concern in the automotive service industry. The industry pays the technicians what is called "flat rate" where the amount of earnings is determined by the number of vehicles that can be serviced by the technician.

There will be two reports of the data released, one on April 4 to the stake holders and the other to the class instructor April 29th. This will allow the material outline for the program to use the findings, and allow the results to be used for the development of improvements to the training program the following month. The report will be made available to the National Alternative Fuels Training Center, NRCCE, and the Technology Education component of the training program through the campus mail.

II. Method decisions

A. Appropriateness of methods

The qualitative design inherent in this study will aid decision makers to make appropriate decisions regarding the program development. The structure of this study reflects the need to provide information to the decision makers. A purposeful sample of participants was selected to provide an opportunity for the decision makers to learn the most from the results of the study.

1. How do the methods being employed follow from the kinds of study questions being asked?

The study will focus on the development of the proposed content for the program. It will not be an study that will be generalized to other training sessions or settings. The individuals involved in this evaluation will be utilized as participants in the study. There is not a need for data collection before the study, and there is no known comparison to be made with another group. The design will then be a one-shot case study of the proposed program.

A study questionnaire was developed for use in the interviews. This questionnaire and probes used is listed in the appendix (QUESTIONS). There were no predetermined forced answers in the questionnaire nor in the interviewing process.

2. What are the strengths and weaknesses of the methods being used in light of the evaluation purpose?

Why NAFTP? In order to do a true study of the development of a training program, it would be necessary to obtain a complete list of national training programs that currently conduct

training in this area and take a random sample from it in order to devise an observation and interview list. This list, of course, does not exist, training programs on the national level are in competition with one another for the few participants nationwide. In attempting to contact the commercially available training directors, it became clear to me that this study would have placed the participating institutions at risk of revealing their course content. To do so would open them up to criticism and subversion. In the haste of trying to find the next best thing, it was assumed that the National Alternative Fuels Training Program probably contained the largest list of interview and observation participants that would be useful.

On the downside, it is necessary to be cautious about generalizing the NAFTP study results in order to be representative of a total population. Understand that NAFTP gets most of its participants from people who submit applications through their training office, and their marketing efforts. Thus, the population of the interview and observation participants that use the NAFTP may be different from the rest of the national population.

The high percentage of sample participants from the NAFTP list should be considered as a limitation of this study. The initial assumption was that participants should expect the rest of the nation to accept the training of the NAFTP. But while the NAFTP mostly trains trainers, it actually affects the entire nation in filtering training development from within the US. Halfway through the study, it was realized that a broader sample of interview and observation participants should have been included. Unfortunately, an alternative list of non-NAFTP based participants were not available. Therefore the data is heavily skewed toward attitudes influenced by NAFTP participants.

B. What design and sampling decisions were made, for what reasons, and with what

consequences?

1. Situations to be sampled

The sample population of those familiar with heavy duty alternative fuel issues was identified from two sources. An initial participant listing was taken from the NAFTP training program instructors. A second listing was developed from the heavy duty vehicle mobile emissions laboratory. The compiled interview listing contained ten potential interviews for this study. Eight interviewees from the NAAFTP listing and two interviewees from the laboratory listing.

2. Time periods to be sampled

The data collection occurred the last weeks of February, and three weeks into March 1996. Between 8:00 AM and 4:00 PM, Wednesday February 21, a study was undertaken during a Fuels Control Knowledge Area training session, this was an observation of the training methods and materials used during the session. On Friday, March 22, 1996 two focus group interviews occurred. One group focused on the Interview Teaching Knowledge Area, from 9:00 AM to 1:00 PM; the other interview, Fuels Control Knowledge Area occurred from 1:30 PM to 5:00 PM. The interviews were facilitated by myself. A list of the final participants is located in the appendix (PARTICIPANT LISTING) .

Time Line

The necessity of completing the time line of this study is important because the available participants and continuos program development pose time constraints. The material development phase will occur in three months, well after the study is completed. A potential

problem will occur if due to time constraints, the participants will not be able to participate in the interview.

Feb.	1	Determine availability of participants
	8	Develop proposed evaluation , questionnaire, and methods
	15	Arrange for the use of data collection materials and equipment
	21	IRB approval of the questionnaire and data collection methodology
	28	Begin data collection
Mar	1	Continue data collection
	7	End data collection , Data formulation, and Data analysis
	14	Data analysis
	21	Preview Data Results
	28	Edits
April	4	Present Results to local Stakeholders
	10	Summarize data presentation results
	25	Present summary
	29	Report due

3. People to be sampled

The interview sessions are to be conducted by one graduate assistant in the Technology Education department. The interviewees will be "expert" trainers and technicians from across the country involved in natural gas vehicles. The data collection taken during these weeks to allow the participants to express their opinion about: what training they expect, and what training and/or experience they have had in the field in order to capture the common area of interest the "expert participants" have in the heavy duty area.

The data collected during the interviews and observation sessions will be developed into cooked notes and compared with the comments from other telephone interviews. The interview comments will be sorted into a matrix of appropriateness, usefulness, and improvements to the proposed training program. The descriptive summary of the study will include quotes from participants either supporting or rebuffing the training content, direction and appropriateness of the training materials.

III. Presentation of data

A. Descriptive information about the program

1. Program origins and history

The National Alternative Fuels Training Program develops training material for the alternative fuels private sector development. As part of their multi-year project, the Technology Education Department at WVU, as well as Engineering, Extension Services, National Resource Center for Coal and Energy (NRCCE), and the Environmental Protection Agency (EPA) is

committed to providing skilled technicians for the alternative fuels industry through the implementation of standardized, competency-based training using fundamental principles, safety procedures, and current technology.

2. Program activities, processes, and goals

The program is funded by the US EPA, organized and administered by West Virginia University and is about two years into the project. There is industry support from the American Gas Association and from the National Propane Gas Association as well as support from major systems manufacturers. These Stakeholders in the project are not the only ones. The project, as a result of its progress has also brought WVU Graduate Assistants under the grant, WV; and Regional Training Centers around the United States (Bronx Community College, NY; Francis Tuttle Vo-Tech Center, OK; College of the Desert, CA; Wentworth Institute of Technology, MA; Central Community College, NE; North Western Community College, OH), and the American Society of Advanced Fuels Technology are key players.

3. Client and staff characteristics

WVU is to provide training and continuing education for instructors in fundamental and advanced topics, and to work with manufacturers to coordinate system specific training for instructors. WVU will coordinate network activities (promotion, technician/ student data analysis, records) while also consulting with the Regional Training Centers in the development of the training material. WVU's Technology Education Department is will develop the instructional materials to train the trainers in the various content areas of emerging fields. A training center has been established in Sabraton West Virginia as a satellite facility of West Virginia University.

B. Description of findings

The study consisted of participants from three content areas associated with alternative fuels training. The responses of the participants tended to display the three areas of the participants background. The focus of the participants in the training program tended towards the quality and usefulness of the training program material that was presented during the training sessions. The developers of the material were concerned with the content of the material to be presented to the participants. The instructors of the training programs tended to be concerned with the appropriateness of the material as well as the methods for presenting the material to the participants.

1. Descriptive information based on observations and/ or interviews

The participants in the study tended to focus on their area of expertise. There was little consideration or insight from the participants into the area of material development. Therefore, the participants were considered content experts.

The interviews and observations tended to be single concept based. The trends that developed from the interviews and observations were not connected in any perceivable manner, other than by comments, that when taken by themselves, would not show connections. When the data was categorized together, trends did occur.

2. Provide whatever information is needed to take the reader into the situation being described and studied.

The most common area in the data was the concern for emissions. The products developed for this field are driven by government regulations to reduce emissions. The manufacturers are designing their devices with the goal of reducing emissions. The training

material developers are designing their material to show the benefits of reduced emission through the use of products designed by manufacturers. The trainers of the material are focusing on delivering the material to the participants in order to show them the adverse effects improper equipment maintenance has on emissions.

C. Analysis of the data

The data tended to focus on a number of related areas. The training on systems being manufactured for alternative applications was common throughout the material. The manufacturers developed the systems based on the concepts of related systems that were successful in other applications. The trainers needed to know system specific information for training. The developers needed information specific information in order to determine the extent of individual system coverage. The technicians needed system specific information to repair and maintain the vehicles.

The comparison of the training material with common automotive training was a common area of interest. The manufacturers were concerned with the individual engine family characteristics. The trainers tended to focus on the differences between the alternative fuel vehicles when compared with the regular gasoline powered vehicles. The material developers were concerned with the distinctive areas of differences between the vehicles and the engines.

Another area of focus was on the length of the training. The product developers were concerned with the training length, because a longer training time would mean less acceptance by the industry when it came to learning the systems. The trainers were concerned with being able to keep the participants attention during the training. The developers of the material were

concerned with the content of the material and with fitting in the important material into the length of existing program training lengths

A further area of focus was on the use of training examples. The product developers were concerned about the comparison of their product with similar products. The trainers wanted real life examples for use in the classroom. The developers wanted knowledge about real life problems that could be used in the training material itself.

An area that received the largest amount of discussion in all groups was emissions. As stated already, emissions regulations are what is driving the industry. The manufacturers wanted the specific numbers required in emissions in order to develop their product. The trainers wanted information on emissions regulation and standards that the technician would be responsible for meeting in the workplace. The participants themselves wanted that information. The product developers wanted similar information to include in the material.

A smaller area of concern was on the costs of alternative fuel vehicles. The manufacturers were concerned with the cost of their individual product when compared with other manufactured systems. The trainers emphasized the cost savings when using an alternative fuel. The training material developers were concerned finding information on fuel and equipment costs.

D. Interpretations and explanations

The manufactures of the systems were profit oriented. Their products were being designed to meet the emissions regulations. Without the regulations, there would probably be no alternative fuels for automobile application training. The trainers realize the regulations drive the industry. If the industry survives, then there will be an increase in the need for training. An

increase in training needs would ensure long term employment for the trainers. The trainers emphasize the cost benefit of switching to the alternative fuels, and act as advertisers for the manufacturers products while educating the technicians. The technicians are in the alternative fuels training programs simply because they are required to comply with their supervisor's requests. The employers are required to utilize a certain number of alternative fueled vehicles in their fleets. The fleets need to be maintained, and so the technicians need to learn about the alternative fuel vehicles in order to maintain them. The fleet owners need to meet the federal regulation concerning the use of alternative fuel vehicles. The law states they must convert their vehicles to run on alternative fuels. The fleet owners purchase the cheapest, or most cost beneficial alternative fuel system for their fleet possible. Their purchase of the alternative fuel system from the manufacture completes the cycle.

Notions about causes and consequences, including hypothesis about the relationship between program processes and program outcomes

The development of a training program for heavy duty alternative fuel vehicle should include considerations of the stakeholders involved in the process. The training material should obviously be readable and useable by the participants. It should also educate the technicians to a sufficient degree, about the driving force behind the alternative fuels market. The program should include hands on training in the areas of emissions adjustments.

IV. Validation and verification of findings

A. Details about actual implementation of methods and reporting on any departures from expected procedures.

Of the observations and interviews, the following data was not included in the formation of the results of this study: 1) Communication problems, such as faults in the recorded transcription of the material; 2) data analysis of external data that may have been relevant to the study. The interviews averaged four hours, the observation lasted eight hours, the data collection totaled twelve hours.

B. Credibility of the findings

1. Evaluator effects - the evaluator's personal role and perspective

The evaluator attended the fuels control observation as an observer, and attended the interviews as the facilitator. For the observation, the participant only took notes on the material being presented and thus tried to be as unobtrusive as possible. During the interviews, the evaluator attempted to maintain the focus of the interview. The evaluator actively participated in the interviews in this fashion, and also used probing questions to maintain the focus of the interviews. The effects of the evaluator then would have been more prevalent during the interviews.

2. Transcription of any recorded reactions from participants or others who have examined the study

The following paragraphs detail the discussion on the topics indicated. The comments are taken from the most prevalent sources on that area. At the end of each comment, is the recommendation for the training material and training program.

TRAINING ON SYSTEMS

The material being developed should not be considered "as a replacement for factory training" that is to be relied upon because the individuals can not afford to go to the manufacturers for training (ITKA, p. 93). The training sessions provided by manufacturers and utilities often provide "more of a reference book" (ITKA, p. 89). The use of a reference book for the technicians is recommended because they are receiving training in the use of specific systems. Therefore, the training material developed should act as preparation for manufacturers training.

The technicians need to be able to work on the components and systems, in order to do this he needs to be taught the "fact that he needs to check the pressures and that he has to contact [the manufacturer] in order to do that" (ITKA, P. 87). "But, how do you come up with a universal way to train somebody to identify with each problem... how do you do that?" (ITKA, p. 77). Therefore, the training material developed should be as universal in its approach as possible.

The technicians need to know the limits of his abilities and expectations. If he is to work on a system that is purchased from a manufacturer and there is a fault with one of the components (i.e. a hose that is too long), "how does he correct that? If he buys the system, it is his job to repair it, not to reengineer it" (ITKA, p. 80). Therefore, the training material developed should include instruction into the basic limits of technicians abilities, so that they may recognize their own limitations, as well as the design limitations of the systems being worked on.

Likewise, how can an instructor tell a mechanic that there is an imbalance between the mixer and the point of entry for the fuel. (I.e. "how many times have you had to place a spacer

between a carburetor and an intake on a gasoline engine?) The technician never does this, he found out what was broken and found out how to fix it, but he never had to reengineer it" (ITKA, p. 81). Therefore, the training material developed should include instruction into the basic limits of a technicians abilities, so that they may recognize their own limitations, as well as the design limitations of the systems being worked on.

There are a number of system manufactures in the alternative fuels arena. The problems associated with the development of training material that will cover all the different manufacturers stems from one of marketing of the individual systems, the manufacturers "will not give their manuals" to people who are not "authorized distributors" (ITKA, p. 94). The individual manufacturers, "they don't have all of that information" (ITKA, p. 71). Therefore, the training material developed should act as preparation for manufacturers training by including universal instruction into the basic limitations of the systems being worked on.

COMPARISONS

Hesitation would be caused a system that is not going to react enough to conditions. Like a vacuum delivery package being partially closed "on the top side of the vacuum diaphragm" (ITKA, p. 58). Therefore, the training material should focus on the causes of common vehicular operating problems.

Hesitation would be caused by a non functioning value at the time an injector needs a functional value, like on the GFI system. What if there is one injector that has more resistance than any of the others. The third injector needs to come on earlier than the fourth injector, yet there is more resistance in the third injector. This causes the third injector to function later than it

needs to (ITKA, p. 58). Therefore, the training material should focus on the basic timing functions and on the requirements for proper fuel distribution.

The diesel engines and the sister engines (those running alternate fuels) produce emissions data and expense data. The data is used to compare expenses from mileage, repairs and changes on the engines running different "fuels in order to find the" different operating parameters (FOCI, p. 111). Therefore the training material should focus on the cost benefits of different engine configurations.

TRAINING LENGTH

The training length would depend on how detailed you would want to get into the information. "Becoming familiar with just the parameters that affect the emissions on one vehicle could take up to a week" (FCOA, p. 129). Therefore, the training developed should focus on the emissions parameters that are consistent with most of the systems in operation.

For the mechanic to understand the importance of relatively low emissions that would also provide the most power, "this would take about a day's worth of training". The "parameter settings are important" and critical for the air fuel ratio. (FCOA, p. 129). Therefore, the training should focus on the adjustments to the emission system that would provide the most efficient power settings.

TRAINING EXAMPLES

If all the participants do is "learn to hook up the equipment and get the sine wave... it sounds like you learn something" (ITKA, p. 97). Therefore, the training material should have hands on training and open ended learning components.

The participant can be instructed to "use resource guides, or giving them guides to use at the point in which it would become product specific" (ITKA, p. 84). At the point of correction, (Check regulator pressure), the guides would say to "see the manufacturers regulator check procedure" (ITKA p. 84). Therefore, the training material should include coverage of the functions, operation, and design of the basic components that are common to the majority of systems, and emphasize the need to refer to the manufacturer's manual for specific procedures.

EMISSIONS KNOWLEDGE

There is a problem in the area of knowledge of the mechanics on emissions. "The mechanic don't realize what they are doing with emissions" (FCOA, p. 144). Therefore, the training material should focus on the influences various engine sensors and adjustments have on emissions.

When a mechanic is told by a driver that a CNG "vehicle is not running worth a damn", that mechanic goes straight to work. He often "goes in and starts turning the knobs. The [engine] starts to run good, but the mechanic don't realize what they are doing with emissions" (FCOA, p. 144). Therefore, the training material should focus on the effects adjustments to basic engine components have on emissions.

The types of emissions in a vehicle are different, and vary in the consistency. The mechanics do need to know the different particulates in emissions, the "gas is the carbon monoxide, nitrous oxide, or the different constituents coming out of the exhaust (FCOA, p. 129). Therefore, the training material should focus on the basic components of emissions.

FUNDING

Once a problem is diagnosed on the alternative fuel engines, it is hard to repair the component due to the expenses. One example comes from diagnosing an engine emissions and finding the cause to be a faulty catalytic converter. "They did not have the funds to go out and buy the $3000 catalytic converter on the vehicle" FCOA, p. 144). Therefore, the training should focus on the preventative maintenance function of technicians in the field so as to benefit the owners of the fleets.

The comments were used in the development of the following recommendations.

V. Conclusions and recommendations

A. What are the basic findings?

o the training material developed should act as preparation for manufacturers training.

o the training material developed should act as preparation for manufacturers training by including universal instruction into the basic limitations of the systems being worked on.

o the training material developed should be as universal in its approach as possible.

o the training material developed should include instruction into the basic limits of a technicians abilities, so that they may recognize their own limitations.

o the training material should focus on the causes of common vehicular operating problems.

o the training material should focus on the basic timing functions and on the requirements for proper fuel distribution.

o the training material should have hands on training and open ended learning components.

o the training material should include coverage of the functions, operation, and design of the basic components that are common to the majority of systems, and emphasize the need to refer to the manufacturer's manual for specific procedures.

o the training material should focus on the basic components for emissions.

o the training material should focus on the influences various engine sensors and adjustments have on emissions.

o the training developed should focus on the emissions parameters that are consistent with most of the systems in operation.

o the training should focus on the adjustments to the emission system that would provide the most efficient power settings.

o the training material should focus on the effects adjustments to basic engine components have on emissions.

o the training should focus on the preventative maintenance function of technicians in the field so as to benefit the owners of the fleets.

o the training material should focus on the cost benefits of different engine configurations.

B. What are the implications of the findings?

The implication of the findings of this study would indicate that there is a need for the stakeholders to be concerned with the government regulations in effect that deal with alternative fuel vehicles. The success of the regulations and their continued enforcement would also indicate that any relaxing of the regulations could be devastating for the stakeholders.

The development of training material in the alternative fuels arena is another area of concern. The training materials appear to need well defined objectives that would include the finding listed above. The inclusion of basic automotive maintenance procedures in alternative fuel training would tend to imply that there is a lack of basic automotive education in the motor vehicle maintenance field in general. This implies a need to review the basic automotive training being conducted in training programs, to ensure they are meeting the minimum basic needs of the student technicians.

C. What are the recommendations?

The recommendation for the development of training material in the alternative fuels area would be to develop the material in conjunction with the stakeholders. An effort should be made to include as many of the stakeholders in the development of the training material as possible. This may be in the form of simply advisors. The stakeholders then would be able to provide important feedback and further recommendations on the topics to be discussed in the training material. The ability of the different levels of stakeholders to participate would also ensure that their concerns would be at least considered in the development process. The training material would then be accepted by all of the stakeholder as being legitimate and worthy of participant attendance.

QUESTIONS

Interview Training Knowledge Area Questions

1. What needs to be developed for the heavy duty training area, given the activities that are already developed?

Fuel Controls Observation Area Interview

1. What we will try and do is focus on the heavy duty vehicle applications. How it would be developed or used in heavy duty vehicles, because we are developing a module for alternative heavy duty vehicles. We are trying to get a feel for what is actually needed out there in the heavy duty field.

Fuel Controls Observation Area Interview Question Probes

1. When you are working with these fleet operators, are they calling you in?
2. Is there going to be some sort of trend in the future?
3. You had mentioned that natural gas vehicles are the alternate fuel vehicles are the outliers, I am to assume that diesel itself is better running?
4. When CO drops, what happens?
5. How do you see the emissions lab being in the heavy duty training for natural gas vehicles
6. How long would the training last?
7. How long would a training session be that also included the emissions lab?
8. In the heavy duty program that has emissions, what else would be included?
9. What other problems are out there?

10. Are there other needs out there that people need fulfilled

11. Do you know of anyone out there that is conducting heavy duty training on alternative fuels... on the heavy duty side, and if so do you know anything about it?

12. Are there any other comments that you want to add to this?

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